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(12) **UK Patent Application** (19) **GB** (11) **2 320 597** (13) **A**

(43) Date of A Publication 24.06.1998

(21) Application No 9807636.7

(22) Date of Filing 14.04.1998

(30) Priority Data

(31) 9721281 (32) 08.10.1997 (33) GB

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(51) INT CL<sup>6</sup>

G01V 1/00, G07F 7/08

(52) UK CL (Edition P)

G4A AAP

G4V VAK

U1S S1172 S1719 S1725

(56) Documents Cited

EP 0120771 A2 WO 85/02696 A1 US 5187352 A  
US 5083309 A US 4951249 A US 4683553 A  
COMPUTER Record 01502288 & Newsbytes,  
NEW03160010, 16 Mar 92

(58) Field of Search

UK CL (Edition P) G4A AAP, G4V VAK  
INT CL<sup>6</sup> G06F 1/00, G07F 7/00 7/02 7/08  
Online: COMPUTER, INSPEC, WPI

(54) Card-controlled personal computer

(57) A personal computer is coupled to a card reader, the output of the reader being arranged to control operation of the personal computer, for example whether the personal computer starts-up, and/or whether the user is allowed operational access to the computer. In a system wherein the computer is hired to a user, the card may indicate the amount of credit available to the user. For security purposes, for example in office use, the card may determine the type of access afforded, or the facilities available, to a user. In a preferred embodiment, the card is a smart card and the computer and card-reader are integrated into an item of furniture, e.g. a desk or writing-table.

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Computers

The present invention relates to computers of the type commonly known as personal computers.

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In general, a personal computer (PC) provides sufficient computing power for use by an individual, and it may provide a number of facilities, depending on resident or loadable programmes, or by virtue of being coupled in  
10 network of computers. Word processing, game playing, and access to the Internet are three facilities often required, individually or in combinations. Input to the computer is commonly by way of a keyboard, mouse or touchpad, and the output is commonly a flat screen or CRT  
15 display, optionally with an audible output.

Many PCs consist of a central processor (base unit) with separate or separable input and output means and are sufficiently large as to be effectively non-portable.  
20 Portable and laptop computers are a variety of PC which normally have the input and output means constructionally integrated with the central processor, the display being a flat screen, and so can be more easily transported by the individual. Nevertheless, although weight and volume  
25 are reduced, the carrying thereof is not without its difficulties, and there is always the danger of damage, loss or theft during a journey. In addition, factors such as the computing power, and the quality of the display, are often a compromise resulting from the need  
30 to provide portability.

It may therefore be considered desirable to have stations where a PC is available to a potential user, e.g. on payment of a charge. For example, a suite of PCs may be  
35 provided at an airport for use by businessmen while they are waiting for their flight, or rooms at a hotel may each be fitted with a PC for use by a businessman as a

word processor or for access to the Internet, or for use by a family for playing games.

5 Under such circumstances, the problem arises as to how use of the computer can be controlled. The present invention provides a personal computer system, comprising a personal computer coupled to a card reader, the output of the reader being arranged to control operation of the personal computer.

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Although the term "reader" is used, implying derivation of information from the card, it should be understood that there will often, although not necessarily, also be the supply of information to the card, this information being used or stored on the card for example. Derivation of information from the card may be effected by various known means, including the use of magnetic or optical interaction, radio transmission and direct electrical contact, and the same type of means, or a different one of the known means can be used for writing to the card.

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In one preferred embodiment, the output of the reader determines whether the PC starts-up. This could be done, for example, by incorporating part of the PC start-up or boot system in a smart card, or a card containing a digital memory such as a ROM, so that presence of the smart card is essential for getting the computer operative. Alternatively, or additionally, information on the card could be used to provide a signal determining whether and/or which facilities on the PC are available to the user, that is to say, whether and/or what functional access is afforded to the user.

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Either of these two alternatives could use a read-only card. However, in the latter alternative, such information could include an indication as to the amount of credit allowed to the user (entered, for example, on

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the card at or prior to purchase), and since this amount is expected to change, the card will also need to be writable. Where the card is a passive card, for example of the type containing a rewritable data store such as a magnetic strip, the store could be re-written under control of the card reader or the PC to decrease the amount of credit as the PC is used. Where the card is a smart card, the decrease could alternatively be controlled by the smart card itself in response to a signal indicative of the fact of operation and/or the mode of operation of the computer. In either case, the decrease could be a function of time that the computer is used, and, optionally, the rate of decrease could be related to the computer facility which has been selected (see below).

Thus start-up of the PC or functional access thereto may be enabled in response to detection of more than a first predetermined amount of credit on the card. The PC may be caused to close down or disable access (hereinafter both will be covered by the term "close") when less than a second predetermined amount of credit is detected on the smart card. In one instance, the first and second amounts may be the same, e.g. zero, but preferably the first amount is greater than the second. In the latter case a warning of imminent closure of, the PC, such as in the form of a display or sound, may be produced by the PC when the decreasing amount of credit reaches a third amount intermediate the first and second amounts.

In either case, it is preferred that detection of the second predetermined amount causes the PC to store parameters relating to the state of the computer at that time, thereby avoiding loss of data when the computer closes, for example when a document is undergoing word-processing. For security, recovery of the data may be permitted only in response to use of the same card.

Although the PC may provide a single facility, it will often be capable of providing a plurality of selectable facilities. In such a case, while it could be that each of the facilities is selectable by the user, it can be  
5 arranged that the output of the reader controls which one, or which combination, of the facilities are made available to the user.

The card itself could be arranged to be used for other  
10 purposes, if desired. For example, in a hotel, the card could be the same as that permitting entry to the hotel room and/or permitting the use of other services, such as the purchasing of items, including meals and refreshments.

15 The system of the invention could be used in ways other than for charging a customer for use of a PC. For example, the card could be used as a security device without which access to a PC, or to all or part of  
20 information or facilities on a PC, is effectively not permitted. Thus the card could contain information relating to the user, indicating which facilities are accessible to that particular user, and which files are accessible. For example, some employees in an office may  
25 be restricted to use of a PC as a word processor, with access restricted to a certain set of stored document files, whereas others may have access to all word processing files and additionally have access to the Internet. Such a system is preferably arranged to work  
30 in conjunction with the requirement to enter a PIN (Personal Identification Number) via a keyboard. In a similar manner, certain facilities in a PC installed in a hotel room might only be accessible to hotel employees.

35 Preferably, the PC is in the form of a item of furniture either as described in our copending International Patent Application No. PCT/GB96/02477, or as described in our

copending British Patent Application No. 0619697.7, with the card reader also integrated into the furniture. The slot or other receptacle for the card could also be concealed by a false drawer front or other movable or  
5 removable part of the furniture. In either case, the item of furniture could be a desk or writing table, inter alia.

The copending British Application relates to an item of  
10 furniture having a substantially flat top surface or substantially flat work surface and a display which comprises a flat screen display device and has a substantially flat surface overall, wherein the top or work surface includes an aperture or recess arranged to  
15 accommodate the flat screen display in a flush position with its said flat surface substantially flush with the top or work surface, the display being displaceable out of the top or work surface from the flush position to a viewing position.

CLAIMS:

1. A personal computer system, comprising a personal computer coupled to a card reader, the output of the reader being arranged to control operation of the personal computer.
2. A PC system according to claim 1 wherein the output of the reader determines whether the personal computer starts-up, and/or whether the user is allowed operational access to the computer.
3. A personal computer system according to claim 2 for use with a card on which is stored an indication of the amount of credit available to the user, wherein the reader enables start-up of the personal computer in response to detection of more than a first predetermined amount of credit on the personal computer.
4. A personal computer system according to claim 3 arranged to cause the personal computer to close down or prohibit functional access when less than a second predetermined amount of credit is detected on the smart card.
5. A personal computer system according to claim 4 wherein the first and second amounts are the same.
6. A personal computer system according to claim 5 wherein the first amount is greater than the second amount.
7. A personal computer system according to claim 5 or claim 6 wherein the first amount is zero.
8. A personal computer system according to any one of claims 4 to 7 wherein detection of a third predetermined

amount of credit greater than the second amount causes the personal computer to issue a warning (message/sound).

5 9. A personal computer system according to any one of claims 4 to 8 wherein detection of the second predetermined amount causes the personal computer to store parameters relating to the state of the computer at that time.

10 10. A personal computer system according to any one of claims 3 to 9 wherein the amount of credit on the card is decreased according to the amount of time that the personal computer is operated by the user.

15 11. A personal computer system according to any preceding claim wherein the personal computer provides a plurality of selectable facilities.

20 12. A personal computer system according to claim 11 wherein the output of the reader controls which one, or which combination, of the facilities are made available to the user.

25 13. A personal computer system according to claim 11 wherein each of the facilities is selectable by the user..

30 14. A personal computer system according to claim 10 in combination with any one of claims 11 to 13, wherein the rate of decrease is determined by which facility is selected.

35 15. A personal computer system according to any preceding claim wherein the card reader is for use with a passive card having information encoded thereon.



16. A personal computer system as claimed in any one of claims 1 to 15 wherein the card reader is a smart card reader.

5 17. A personal computer system according to claim 15 for use with a smart card which contains at least part of the start-up system of the personal computer, whereby the computer cannot be started without the presence of a said smart card.

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18. A personal computer system according to any preceding claim wherein the reader is also arranged to supply information to the card.

15 18. A personal computer system according to claim 10 in combination with claim 16 or claim 17 and comprising a smart card which is arranged to perform said decreasing of the amount of credit.

20 19. A personal computer system comprising a personal computer and a card reader substantially as hereinbefore described.



Application No: GB 9807636.7  
Claims searched: 1-19

Examiner: Geoffrey Western  
Date of search: 7 May 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): G4A (AAP) ; G4V (VAK)

Int Cl (Ed.6): G06F 1/00 ; G07F 7/00 7/02 7/08

Other: Online : COMPUTER, INSPEC, WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage			Relevant to claims
X	EP 0120771 A2	(C.I.T.I)	See whole document	1-6,10,11,13,15
X	WO 85/02696 A1	(GARDINER)	See whole document	1,2,11,12,15,16
X	US 5187352 A	(BLAIR et al)	N.b. cols 1-6	1-5,7,8,10-12,15,18
X	US 5083309 A	(BEYSSON)	See whole document	1,2,11,13,16,18
X	US 4951249 A	(McLUNG et al)	N.b. cols 1-7	1,2,11-13,15
X	US 4683553 A	(MOLLIER)	See whole document	1,2,11,12,16,18
X	COMPUTER Record 01502288 and Newsbytes, NEW03160010, 16 March 1992, McMullen B E and J F, "New anti-virus protection awaits patent"			1,2,11,13,16,17

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X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.